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Mental health in Systemic Sclerosis: A literature review

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ABSTRACT

Systemic sclerosis (SSc), known as scleroderma, is a complex autoimmune disorder marked by skin and internal organ fibrosis, vasculopathy, and immune system abnormalities. This chronic condition presents diverse clinical features, from skin thickening to serious organ involvement affecting the heart, lungs, gastrointestinal tract, and kidneys. Pathogenesis involves immune dysregulation, endothelial dysfunction, and fibroblast activation, which leads to excess collagen deposition. While genetic, environmental, and immunological factors contribute to its development, the exact cause remains unknown. Despite progress in understanding SSc pathophysiology and treatment, the disease significantly challenges patients and healthcare providers due to its diverse manifestations, particularly from pulmonary and cardiovascular complications. Additionally, SSc has the highest mortality rate among rheumatic diseases. Beyond physical symptoms, SSc profoundly impacts mental health, with patients frequently experiencing depression, anxiety, sexual dysfunction, sleep disturbances, and self-image issues. This review explores the relationship between SSc and mental health, highlighting the prevalence of psychiatric symptoms, psychosocial factors, and their implications for disease management. By examining current literature, this review aims to enhance understanding of SSc's multifaceted nature and inform comprehensive care strategies to meet the holistic needs of patients. It underscores the importance of integrating mental health evaluations into routine SSc management and developing targeted interventions to improve psychological well-being and overall quality of life for SSc patients.

Keywords: Systemic Sclerosis; Scleroderma; mental health; depression; anxiety

1. INTRODUCTION

Systemic sclerosis (SSc), known as scleroderma, is a multifaceted autoimmune disorder characterized by skin and internal organs fibrosis, immune dysregulation, and vasculopathy (Denton and Khanna, 2017). This chronic condition manifests with a broad spectrum of clinical features, ranging from

cutaneous manifestations such as skin thickening and tightening to visceral involvement impacting vital organs such as the heart, lungs, gastrointestinal tract, and kidneys (Cutolo et al., 2019). The pathogenesis of SSc is complex and involves aberrant activation of the immune system, endothelial dysfunction, and dysregulated fibroblast activity, leading to excessive collagen deposition and tissue fibrosis (Frech et al., 2015). While the exact etiology remains elusive, genetic predisposition, environmental triggers, and dysregulated immune responses play pivotal roles in disease development and progression (Rosendahl et al., 2022).

Despite advancements in understanding SSc pathophysiology and therapeutic strategies, the disease poses significant challenges to patients and healthcare providers. Alongside its diverse clinical manifestations, SSc is associated with substantial morbidity, with pulmonary complications and cardiovascular involvement being significant contributors to disease burden (Elhai et al., 2012). Furthermore, scleroderma exhibits the highest mortality rate among all rheumatic conditions (Elhai et al., 2017). In addition to its physical manifestations, SSc exerts a profound impact on mental health and psychological well-being.

In this review, we aim to explore the intricate relationship between SSc and mental health, examining the prevalence of psychiatric symptoms and psychosocial factors and their implications for disease management and outcomes. By synthesizing existing literature and identifying knowledge gaps, we aim to improve our understanding of the multifaceted nature of SSc and inform the development of comprehensive care strategies to address the holistic needs of patients.

2. METHODS

Search Strategy

We conducted a comprehensive literature search in the PubMed database to identify relevant studies on the mental health aspects of SSc. The search included articles published up to May 2024. We used the following keywords and their combinations: "systemic sclerosis" OR "scleroderma" AND "mental health" OR "depression" OR "anxiety" OR "sexual dysfunction" OR "sleep disturbance" OR "self-image".

Inclusion and Exclusion Criteria

The studies included in the review met the defined criteria. They had to focus on patients diagnosed with SSc and address various mental health issues such as depression, anxiety, sexual dysfunction, sleep disturbances, and self-image concerns among SSc patients. Moreover, these studies had to be published in peer-reviewed journals. Lastly, they had to be available in English. On the other hand, we excluded studies if they primarily addressed the physical aspects of SSc with only minor reference to mental health. Additionally, editorials or opinion pieces without original data were excluded. We also excluded studies that predominantly focused on other diseases with only incidental mention of SSc. Finally, we excluded non-English publications.

Data Extraction

Three reviewers separately extracted data. The extracted data encompassed several domains: study characteristics, mental health outcomes, tools and measures used to assess mental health outcomes (such as the Patient Health Questionnaire-9 for depression and the Social Appearance Anxiety Scale), and key findings related to the impact of SSc on mental health.

Data Synthesis

A narrative synthesis was conducted. The findings were classified according to the addressed mental health issues (depression, anxiety, sleep disturbance, self-image) and summarized to provide a comprehensive overview of the latest state of knowledge on mental health in patients with systemic sclerosis.

3. RESULTS

Depression

Depression is three times more common in SSc patients than in the general population (Jha et al., 2022; March et al., 2019). Research indicates that when SSc patients completed the Patient Health Questionnaire-9 (PHQ-9), they exhibited a 25% higher rate of depression compared to an age-matched healthy general population (DiRenzo et al., 2021). In cross-sectional studies, the prevalence of depression in patients with SSc ranges from 35 to 65%, as assessed by validated depression questionnaires (Savoie et al., 2023). The gastrointestinal

tract ranks second most frequently affected organ system in people with systemic or localized scleroderma (Nassar et al., 2022). Gastrointestinal complications in diffuse or limited scleroderma negatively affect the functioning of visceral organs.

These issues arise due to fibrosis of the gastrointestinal tract, vascular damage, and inflammatory processes Murtaugh and Frech, (2013), malnutrition in SSc advances due to impaired digestion and malabsorption. Reduced oral intake in SSc often leads to symptoms such as nausea, vomiting, dysphagia, and changes around the mouth. Frequently, SSc patients experience finger contractures, hindering their ability to prepare and consume food. Furthermore, decreased appetite in SSc patients is often linked to depressive symptoms (Emmanuel, 2016; Türk et al., 2020). Bowel incontinence significantly exacerbates mood swings and depressive episodes in individuals with SSc (Shreiner et al., 2016).

Patients with chronic illnesses report feelings of depression that are not necessarily linked to their physicians' perceptions of their condition's severity or the extent of physical damage. Furthermore, there was no observed association between SSc-related autoantibodies and an elevated risk of depression, indicating that depression may be prevalent across various levels of SSc severity (Bragazzi et al., 2019). The burden of the disease is related to having a chronic illness but isn't necessarily linked to how severe it is. Using Patient-Reported Outcome Measures (PROMs) offers an extra viewpoint on the state of health for managing chronic diseases (Frech et al., 2018).

Anxiety and Obsessive-Compulsive Disorder

Anxiety disorders are frequently reported among individuals diagnosed with SSc (Henry et al., 2023). The chronic and unpredictable nature of SSc can significantly contribute to heightened levels of anxiety. Patients often experience fear and worry regarding the progression of their disease, potential complications, and uncertainties surrounding treatment outcomes (Nassar et al., 2023). One study reported that 49.1% of patients with SSc experienced moderate anxiety, 17.5% experienced severe anxiety, and 6.1% required psychiatric intervention (Faezi et al., 2017). Obsessive-Compulsive Disorder (OCD), characterized by intrusive thoughts (obsessions) and repetitive behaviors (compulsions), is another mental health concern prevalent in SSc patients. While research explicitly focusing on OCD in SSc is scarce, anecdotal evidence and observations from clinical practice suggest a significant overlap between the two conditions (Khan et al., 2019).

Sexual dysfunction

Erectile dysfunction (ED) is a common complaint among male patients with SSc. One study revealed that men with SSc reported significantly poorer sexual function, with 70% experiencing ED, compared to 15% of age-matched healthy controls (Heřmánková et al., 2024). Additionally, the occurrence of ED was linked to more extensive organ involvement in SSc. Men experiencing any degree of ED exhibited a higher modified Rodnan skin score, along with a higher prevalence of muscle atrophy, a history of renal failure, increased pulmonary arterial pressure, and restrictive lung disease (Foocharoen et al., 2012). Heřmánková et al., (2024) revealed that elevated systemic inflammation, more significant fatigue, severe depression, and worse dyspepsia could independently predict sexual dysfunction.

Self-image

Many people with SSc experience distressing and frequent changes in their appearance. It often occurs in socially significant areas of the body, such as the face and hands, making appearance-related anxiety and similar concerns particularly relevant. Oropharyngeal manifestations significantly impact patients' overall quality of life and can affect psychological health (Smirani et al., 2018). Paquette and Falanga, (2003) demonstrated that patients were highly concerned about their facial features. Currently, there are no evidence-based interventions available for treating appearance anxiety in individuals with SSc. Increasing interest in appearance anxiety in SSc has resulted in the validation of several relevant measures for this population, such as the Social Appearance Anxiety Scale (Mills et al., 2018). Future research needs to concentrate on developing interventions to address appearance anxiety and using randomized controlled trials to evaluate their effectiveness (Gholizadeh et al., 2019).

Sleep disturbance

Sleep disturbances are frequently observed among individuals with SSc (Figueiredo et al., 2021; Milette et al., 2011). Various factors, including gastrointestinal and respiratory issues, depression, pain, fatigue, and levels of functional disability, contribute to the

disruption of sleep patterns in SSc patients, reflecting the complex and multi-dimensional nature of the disease (Sariyildiz et al., 2013). Pain significantly correlates with sleep disturbances among SSc patients Milette et al., (2011), whereas diminished sleep quality is linked to elevated fatigue levels (Frech et al., 2011). Patients with SSc had higher Pittsburgh Sleep Quality Index (PSQI) scores than those with rheumatoid arthritis and controls (Bagnato et al., 2016). The lower quality of sleep adversely impacts both the quality of life and the extent of disability among individuals living with SSc (Santos et al., 2024).

4. DISCUSSION

The mental health impacts of SSc are profound and multifaceted, affecting a significant group of patients. This review sums up the current literature on the psychological and psychiatric challenges faced by individuals with SSc. The findings highlight the need for a comprehensive care approach that focuses on the mental and physical aspects of the disease. Patients with SSc consistently report lower health-related quality of life (HRQoL) compared to patients with rheumatoid arthritis or systemic lupus erythematosus Park et al., (2019) and the general population (Li et al., 2018). Individuals with SSc often experience heightened levels of anxiety, fatigue, and depression, which can further exacerbate their disease course and impair their quality of life (Pagkopoulou et al., 2019). The association between SSc and depression highlights the importance of regular mental health screenings for these patients.

Healthcare providers should consider incorporating standardized tools like the PHQ-9 into routine assessments to identify and address depressive symptoms early. Addressing sleep disturbances in SSc requires a multifaceted approach considering the underlying physical and psychological contributors. Pain management, treatment of gastrointestinal and respiratory symptoms, and psychological interventions to reduce depression and anxiety can collectively improve sleep quality. Regular assessment of sleep patterns and tailored interventions should be integral components of SSc management. Healthcare providers should proactively discuss sexual health with SSc patients, recognizing the significant yet often overlooked influence of sexual dysfunctions on quality of life. Interventions should be tailored to manage underlying physical conditions and provide psychological support, enhancing overall patient care.

Patients suffering from SSc inevitably accumulate substantial personal healthcare costs throughout their illness. They frequently cease employment (López-Bastida et al., 2016; Decuman et al., 2012). Enhancing awareness, identifying modifiable risk factors, and implementing strategic employment initiatives and workplace modifications are potential approaches to mitigating this burden (Morrisroe et al., 2016). Despite the comprehensive approach of this review, it has several limitations. Firstly, the heterogeneity of the included studies, in terms of design, sample size, and population characteristics, poses challenges to synthesizing findings and drawing generalized conclusions. Secondly, relying on self-reported measures for assessing mental health outcomes may introduce response biases, affecting the accuracy of reported prevalence rates and symptom severity. Longitudinal studies are needed to understand better the temporal dynamics and potential bidirectional influences between physical and psychological health in SSc patients.

While mental health is an important aspect of SSc, it is essential to remember that the primary contributors to reduced health-related quality of life (HRQoL) are the physical symptoms, which are the core of the disease (Salaffi et al., 2019). Notwithstanding the increasing acknowledgment of the significance of mental health in SSc, there is still a lack of research specifically dedicated to exploring this aspect of the disease. Consequently, there is a need for further investigation to elucidate the mechanisms underlying the association between SSc and mental health outcomes, as well as to develop targeted interventions to improve psychological well-being in this population (Allanore et al., 2015). Understanding the interplay between physical symptoms and psychological distress is crucial for providing holistic care to SSc patients and optimizing treatment outcomes (Thombs et al., 2008).

5. CONCLUSION

This review highlights the significant impact of SSc on mental health, emphasizing the prevalence of depression, anxiety, sexual dysfunction, sleep disturbances, and self-image concerns among patients. Comprehensive care strategies must address SSc's physical and psychological aspects to improve patient outcomes and quality of life. Regular mental health screenings should be integrated into SSc management to identify and address psychiatric symptoms early. Healthcare providers should proactively discuss sexual health with patients. Addressing appearance-related anxiety through validated measures and developing targeted interventions is essential for supporting patients' self-image. Overall, a holistic approach that considers the interplay between physical symptoms and

psychological distress is crucial for optimizing treatment outcomes and enhancing the quality of life for individuals with SSc. Future research should focus on understanding the association between SSc and mental health.

Authors' Contribution

Maciej Nowicki: Conceptualization, writing- rough preparation, methodology, investigation

Anna Salińska: Conceptualization, methodology

Julia Skwara: Resources, writing- rough preparation

Natalia Dąbrowska: Resources, investigation

Dawid Barański: Conceptualization, writing- rough preparation

Marcin Wasilewski: Methodology, data curation

Agnieszka Góra: Conceptualization, data curation

Konstancja Węgrzyn: Visualization, data curation

Gustaw Laskowski: Writing - Review and editing, supervision

Piotr Węgrzyn: Formal analysis, supervision

Maciej Nowicki: Project administration

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Not applicable.

Ethical approval

Not applicable.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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